

 wherein said program further comprises referring to said memory storing a table indicating a correspondence of the plurality of physical disk units and said logical volume with said designated logical volume to select a physical disk unit on which said logical volume is allocated in accordance with said designation of said logical volume by a high-rank apparatus.

REMARKS

In the Office Action mailed September 11, 2000, claims 1, 3-7, and 9-16 were rejected under 35 U.S.C. §102(e) as being anticipated by Tanaka et al. (U.S. Patent No. 5,542,064).

Claims 6 and 12 are canceled.

The foregoing rejections of remaining, pending claims are traversed.

Claims 2 and 8 having were previously canceled. Therefore, claims 1, 3-5, 7, 9-11, and 13-16 are pending. Claims 1, 3, 7, 9, 13, 14, 15, and 16 are amended. Claims 1, 7, 13, 14, 15, and 16 are independent claims. Claims 3-5 depend from claim 1, and claims 9-11 depend from claim 7.

Tanaka discloses a RAID or shadow disk system, as disclosed in column 1. That is, in Tanaka, the object is to "enhance the input/output throughput of a secondary storage device having a plurality of storage units", as disclosed in column 2, lines 25-30. To attain the object of Tanaka, the Tanaka method selects "storage units less in the degree of waiting for processing of input/output commands as a group of storage units to be subjected to multiple writing of a group of storage units to be subjected to multiple writing of identical data in a secondary storage device having a plurality of storage units", as disclosed in column 2, lines 54-60.

In an embodiment of Tanaka, "When an output command is transferred...The disk drive numbers of m disk drives having data required by the command are retrieved by searching the data address management table 50 (as shown in Fig. 3) on the basis of the logical address of the output command set by the CPU 1...all the disk drive numbers not subjected to

I/O processing, that is, which the area 402 of the disk drive management table 60 has zero, are retrieved (a step 610)", as disclosed in column 8, lines 1-30.

That is, Tanaka discloses a searching method of a less waiting physical storage unit that searches the corresponding disk by the logical address using the address management table 50 and then searches a less waiting disk by using the disk drive management table 60.

In contrast, the present invention relates to a searching method of a less waiting physical disk allocated a designated logical volume by a host.

Tanaka, on the other hand, discloses a searching method of less waiting physical disk allocated logical address by a host. Moreover, Tanaka discloses a table including a correspondence between a plurality of physical disk units and logical address.

In contrast to Tanaka, and in order to a search in the present invention, a controller includes "a table indicating a correspondence of the plurality of physical disk units and said logical volume"; "and said controller refers to said memory with said designated logical volume to select a physical disk unit on which said logical volume is allocated in accordance with said designation of said logical volume by a high-rank apparatus", as recited in each of the above-mentioned independent claims 1, 7, 13, 14, 15, and 16 of the present application.

An Information Disclosure Statement is filed concurrently herewith, citing The RAIDBook, A Source Book for RAID Technology, Edition 1-1, published by the RAID Advisory Board, St. Peter, MN, November 18, 1993 (The RAIDBook). As discussed on pages 28 and 37 of The RAIDBook, a logical volume defines a virtual disk for a disk array management program of the host, and differs from the logical address in Tanaka.

A benefit of the foregoing features of the present invention is that the physical disk units are able to perform the requested operations in an ordered manner. Accordingly, high speed access of the disk units can be performed.

Dependent claims 3-5 and 9-11 recite patentably distinguishing features of their own. For example, claim 3 recites "a resource manager circuit determining one of the plurality of physical disk units to be accessed in accordance with said number of operations in said

memory in response to a transfer request from said channel adapter circuit, and requesting said device adapter circuit to perform an operation accessing said determined physical disk unit".

A benefit of the features recited in claim 3 is that the disk unit to be accessed is determined by the resource manager included in the "control means".

Withdrawal of the foregoing rejections is respectfully requested.

Moreover, a LETTER TO THE OFFICIAL DRAFTSPERSON TO SUBMIT FORMAL DRAWINGS is filed concurrently herewith.

CONCLUSION

If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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